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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/662,937	09/15/2000	Naoaki Kitagawa	PM 273286	1661

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EXAMINER
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UHLIR, NIKOLAS J

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/30/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/662,937

Applicant(s)

KITAGAWA ET AL.

Examiner

Nikolas J. Uhlir

Art Unit

1773

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/26/02.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 9, 11-17, 20-23, 30 and 32-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 11-17, 20-23, 30, and 32-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

This office action is in response to the amendment filed 11/26/02. Applicant's amendment requires that the examiner withdraw the previous rejection, as it incorporates a new limitation into each of the independent claims. Accordingly, a new action on the merits follows.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 9, 11-14, 20-23, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaumle et al. (US6068890) as evidenced by Schwing et al. (US5656335).

3. Regarding the limitations of claim 1, wherein the applicant requires a surface structure formed on an aluminum wheel for an automobile, herein the surface structure comprises a resin film on the aluminum wheel and a thin metal film formed on the resin film, said thin metal film being a titanium aluminum alloy containing 20-50% by weight Ti and 50-80% by weight Al.

4. Kaumle et al. teaches a method for gloss coating articles, more specifically articles used for vehicles and vehicle wheels (column 2, lines 17-26). The method includes coating the vehicle wheel with a powdered paint coating, and subsequently coating the wheel with a high gloss layer, which is made of a metal or a metal alloy

Art Unit: 1773

(column 2, lines 35-41). Suitable materials for forming the wheel include titanium, aluminum, or magnesium (column 5, lines 55-62). Therefore it would have been obvious to one of ordinary skill in the art to utilize aluminum wheels for the invention of Kaumle et al. as aluminum is taught to be equivalent to the other materials listed as suitable for use.

5. Kaumle et al. further teaches that the powdered paint coating is a process optimized powdered baking finish (column 3, lines 25-27), which as evidenced by Schwing et al. are manufactured from resin materials, for example polyester resins (Schwing column 1, lines 57-59). Further, Kaumle teaches that the thin metal layer is preferably manufactured from systems including titanium, aluminum, and nitrogen; titanium, zirconium, and nitrogen; and zirconium, aluminum, and nitrogen; as well as various other metals and metal compositions known in the art (column 3, lines 28-40). These metal layers are preferably applied via reactive pulsed magnetron sputtering (column 4, lines 7-10).

6. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an alloy of titanium, aluminum, and nitrogen as the alloy in Kaumle et al. as this material is taught to be equivalent to the others listed as suitable.

7. Regarding the requirement in claim 1 that the TiAl alloy contain 20-50% by weight Ti and 50-80% by weight Al. The examiner acknowledges that Kaumle et al. does not specifically teach the compositions of the metal alloys utilized. However, Kaumle et al. does teach that the color of the thin metal film layer is controlled by the

Art Unit: 1773

composition of the thin film (column 4, lines 7-20). Thus, the examiner takes the position that the composition of the thin metal film of Kaumle et al. is a results effective variable.

8. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the composition of the thin metal film of Kaumle et al. to achieve a thin metal film having a desired color.

9. Regarding the examiners argument that the composition of the TiAl alloy is a results effective variable. It is important to note that the teaching in Kaumle et al. that the composition of the thin metal film controls the color of the film goes right to the heart of the applicants invention. Applicants in their instant invention are trying to produce a "bright" surface structure on the surface of an aluminum alloy wheel. Applicant in the specification interchangeably uses the terms "brightness" and "color" to describe the films of the instantly claimed invention (see examples 12 and 13 of the specification). Kaumle et al. is directed towards attaining a surface structure on a automobile wheel that has both glossy (i.e bright) and has a desired color. Thus, it would have been within the realm of one of ordinary skill in the art at the time the invention to change the composition of the TiAl film of Kaumle et al. to eventually arrive at a composition which would be similar or identical to that of the instantly claimed invention, as the prior art and the instant application have similar goals.

10. Regarding the limitations of claim 2, wherein the applicant requires a clear protective film over the surface of the thin metal film. Kaumle teaches the use of a transparent protective film at column 2, lines 40-41. Thus, the limitations of claim 2 are met.

Art Unit: 1773

11. Regarding the limitations of claim 3, wherein the applicant requires the limitations of claims 1 and 2 combined, and further requires that the clear protective coating be colored. The bulk of the limitations of claim 3 are addressed above. Regarding the color requirement for the transparent layer, Kaumle et al. teaches that the transparent wear resistant topcoat can comprise a pigment or paint (column 2, lines 25-26). As pigments by their definition alter the color of another object, the examiner takes the position that the limitations of claim 3 are met when the wear resistant topcoat of Kaumle et al. comprises a pigment is utilized.

12. Regarding claim 9, wherein the applicant requires the thin metal film to have a thickness between 0.03-1.0 $\mu$ m. Kaumle et al. teaches that the thickness of the thin metal layer is preferably 0.1-0.5 $\mu$  thick (column 3, lines 54-56). This range is completely encompassed by applicants required range. Thus, this limitation is met.

13. Regarding claims 11 and 12, wherein the applicant requires the clear colored protective film to have a thickness in the range of 5-20 $\mu$  (claim 11) or 20-40 $\mu$  (claim 12). The transparent wear resistant coating of Kaumle et al. is either a 0.5-20 $\mu$ m thick layer of Ormocer, or a 1-100 $\mu$ m thick layer of an organic resin, such as a urethane, acrylate, or epoxy resin (column 3, lines 40-46). As 20 $\mu$  is encompassed in the range of claim 11, the examiner takes the position that this limitation is met. Regarding claim 12, the Kaumle et al. teaches that the transparent wear resistant coating can comprise a pigment or paint (column 2, lines 24-26).

Art Unit: 1773

14. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a pigment into the 0.5-20 $\mu$  thick Ormocer coating of Kaumle et al. in order to attain a desired color for the top coat.

15. The examiner takes the position that the limitations of claim 12 are met when a pigmented 20 $\mu$  coating of Ormocer is used as the transparent top coat, as 20 $\mu$  is encompassed by the range specified by claim 12.

16. Regarding the limitations of claim 13, wherein the applicant requires the clear colored protective coating to comprise a transparent resin and a pigment or dye. These limitations are met as set forth above for claim 3.

17. Regarding claim 14, wherein the applicant requires the clear colored film to comprise clear resin selected from acryl-based, urethan-based, or epoxy based resins, and a pigment or a dye. Kaumle et al. teaches the use of acrylate, urethane, or epoxy resins as the transparent wear resistant layer (column 3, lines 40-46). Further, Kaumle et al. teaches that the transparent wear resistant coating can comprise a pigment or paint (column 2, lines 24-26).

18. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to select an acrylate, urethane, or epoxy resin as the transparent wear resistant layer of Kaumle et al. as they are taught to be equivalent both to each other and the other materials listed as suitable for this purpose.

19. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add a pigment to the acrylate, urethane, or epoxy resin

Art Unit: 1773

transparent wear resistant layer in order to achieve a desired color in the wear resistant layer.

20. Thus, the limitations of claim 14 are met.

21. Regarding claim 20, wherein the applicant requires a method for forming a structure having the requirements of claim 1 by cathode arc-type plating or sputtering using a target that contains titanium and aluminum. The bulk of the material properties (i.e film composition) required by claim 20 are addressed in claim 1, and for the sake of brevity will not be re-addressed here. Regarding the process limitations of claim 20, Kaumle et al. teaches forming the thin metal film via magnetron sputtering from separate targets of aluminum and titanium or a single target consisting of titanium, aluminum, and nitrogen. Thus, the limitations of claim 20 are met.

22. Regarding claims 21-22, these claims require essentially the same requirements as claims 2-3 and 20, as claims 21 and 22 do not require any substantial method steps other than those required by claim 20. Thus, the limitations of claims 21 and 22 are met as set forth above for claims 2-3 and 20.

23. Regarding claim 23, wherein the applicant requires the resin layer to be applied via powder coating. As stated above for claim 1, Kaumle et al. teaches that the powdered paint coating is a process optimized powdered baking finish (column 3, lines 25-27), which as evidenced by Schwing et al. are manufactured from resin materials, for example polyester resins (Schwing column 1, lines 57-59). It is the examiners position that process optimized powdered baking finishing is equivalent to applicants claimed powder coating. Thus, this limitation is met.



24. Regarding claims 30, and 32-35. These claims require essentially the same limitations as claims 9, 11-14, and 22. As the applicant does not require any substantial method limitations in claims 30 and 32-35, these limitations are met as set forth above for claims 9, 11-14 and 22.

25. Claims 15 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaumle et al as applied to claims 1, 3, 20, and 22 above, and further in view of Tsuge et al. (US5227451).

26. Kaumle et al. does not teach a clear colored topcoat layer wherein the colored topcoat comprises a pigment selected from carbon-based, lead chromate based, iron (II) ferrocyanide based, cobalt based, or chromium oxide based pigments.

27. However, it should be noted that Kaumle et al. does teach the use of transparent epoxy, acrylate, and polyurethane resins as a transparent topcoat, and that these resins can comprise a pigment, as stated above.

28. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize transparent polyurethane as the transparent topcoat layer, as this material is taught to be equivalent to the others listed as suitable.

29. Further, Tsuge et al. teaches that inorganic materials such as red oxide, chrome yellow, titanium dioxide, zinc white, and carbon black can be added to polyurethanes as colored pigments (column 5, lines 10-26).

30. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to pigment the polyurethane topcoat taught by Kaumle et al. with a inorganic colored pigment such as carbon black, as taught by Tsuge et al.

Art Unit: 1773

31. One would have been motivated to make such a modification due to the teaching in Tsuge et al. that Carbon black is a known pigment that is added to polyurethane for the purpose of coloring and due to the fact that Kaumle et al. teaches that a pigment may be added to the transparent protective layer.

32. Claims 16 and 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Kaumle et al. as applied to claims 1, 3, 20, and 22 above, and further in view of Dietz et al. (US5264032).

33. Kaumle et al. does not teach a colored resin topcoat wherein the resin topcoat contains a pigment selected from thren-based, quinacrine-based, isoindolinone-based, or metal complex pigments.

34. However, it should be noted that Kaumle et al. does teach the use of transparent epoxy, acrylate, and polyurethane resins as a transparent topcoat, and that these resins can comprise a pigment, as stated above.

35. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize transparent polyurethane as the transparent topcoat layer, as this material is taught to be equivalent to the others listed as suitable.

36. Dietz et al. teaches that isoindolinone pigments can be added to high molecular weight materials such as polyurethanes for the purpose of pigmenting these compositions (Abstract).

37. Therefore it would have been obvious to one with ordinary skill in the art at the time the invention was made to use the isoindolinone-based pigment taught by Dietz et al. in the polyurethane topcoat layer taught by Kaumle et al.

Art Unit: 1773

38. One would have been motivated to make this modification due to the teaching in Kaumle et al. that the transparent topcoat layer can contain a pigment if desired, and the teaching in Dietz et al. that isoindolinones are additives that are used to pigment polyurethanes to attain a desired color.

39. Claims 17 and 38 rejected under 35 U.S.C. 103(a) as being unpatentable over Kaumle et al. as applied to claims 1, 3, 20, and 22 above, and further in view of Hirai et al. (US4367307).

40. Kaumle et al. does not teach a clear colored resin topcoat that contains a dye selected from mordant dyes, acid dyes, basic dyes, disperse dyes, edible dyes, direct dyes, or sulphur dyes.

41. However, it should be noted that Kaumle et al. does teach the use of transparent epoxy, acrylate, and polyurethane resins as a transparent topcoat, and that these resins can comprise a pigment, as stated above.

42. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize transparent polyurethane as the transparent topcoat layer, as this material is taught to be equivalent to the others listed as suitable.

43. Hirai et al. teaches a polyurethane composition that is formed from a polymeric diol, hydrazine, and an organic alicyclic dyamine. These polyurethanes also contain at least one dye selected from metal complex dyes, vat dyes, sulfur dyes, and acid dyes (column 2, lines 17-25). Websters Collegiate Dictionary 10th edition 1998 defines "dye" as "a soluble or insoluble coloring matter."

44. Therefore it would have been obvious to one with ordinary skill in the art to use a metal complex dye, vat dye, sulfur dye, or acid dye as taught by Hirai et al. in the polyurethane topcoat layer taught by Kaumle et al.

45. One would have been motivated to make such a modification due to the teaching in Kaumle et al. that colorant could be added to the polyurethane topcoat, and the teaching in Hirai et al. that metal complex dyes, vat dyes, sulfur dyes, or acid dyes are suitable materials for dyeing polyurethane.

#### ***Response to Arguments***

46. Applicant's arguments with respect to claims 1-3, 9, 11-17, 20-23, 30, and 32-38 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

47. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1773

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhler whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.



nju  
January 29, 2002



**STEVAN A. RESAN**  
**PRIMARY EXAMINER**